Society Reports.

AMERICAN NEUROLOGICAL ASSOCIATION.

Nineteenth Annual Report.

Wednesday, First Day, Morning Session.

The American Neurological Association convened at the West End Hotel, Long Branch, N. J., July 20th, 1887, and was called to order by the President, Dr. CHARLES K. MILLS, of Philadelphia, who asked that the by-laws be suspended temporarily to receive a report from the Council. The request was granted.

REPORT OF THE COUNCIL.

Dr. GRAEME M. HAMMOND, of New York, Secretary, reported that the Council had unanimously recommended the election of of the following applicants for membership: Henry Hun, of Albany; Henry M. Lyman, of Chicago; Irvine C. Ross, of Washington; Theodore H. Kellogg, of New York; and Philip Coombs Knapp, of Boston.

They were elected by a ballot cast by the Secretary. The following

AMENDMENT TO THE CONSTITUTION

was then adopted. Article 3 of the Constitution shall be amended so as to read as follows:

" There shall be two sorts of members, namely, active members not exceeding at any one time one hundred in number " (instead of fifty).

On motion, the reading of the minutes of the last annual meeting, already published, was dispensed with.

MEMBERS PRESENT.

The following members were present during either the whole or a part of the meeting:

Drs. Charles K. Mills, of Philadelphia; Landon Carter Gray, of Brooklyn; Robert T. Edes, of Washington; F. T. Miles, of Baltimore; James Hendrie Lloyd, Francis X. Dercum, and Wharton Sinkler, of Philadelphia; J. J. Putnam, of Boston; Henry Hun, of Albany; Graeme M. Hammond, B. Sachs, E. C. Spitzka, Ralph L. Parsons, M. Allen Starr, R. W. Amidon, Theodore H. Kellogg, C. L. Dana, George W. Jacoby, E. D. Fisher, and Nathan E. Brill, of New York; and Isaac Ott, of Easton, Pa.

MEMBERS BY INVITATION.

Dr. J. Jastrow, of Johns Hopkins University, and Prof. Samuel Ayers, of Pittsburgh, Pa.

REPORT OF THE TREASURER.

Dr. Graeme M. Hammond, of New York, Secretary and Treasurer, presented the annual report, which, on motion, was accepted. There was a balance in the treasury of $110.00.

After the transaction of the above preliminary business, the retiring President delivered the following address:

ADDRESS OF DR. C. K. MILLS.

At the meeting of this Association last year, an amendment to the Constitution, which I have no doubt will be acted upon favorably, was offered as follows: "The officers shall enter upon their duties immediately after the adjournment of the annual meeting at which they are elected." The offering of this amendment, and the favor with which it was received, shows that the Association is fully satisfied with one formal address by its President, and receives this by preference at the inauguration of his term of service. I will, therefore, detain you but a few minutes before making way for my distinguished colleague, the President elect. Otherwise I am sure you will all feel like saying, "Welcome the coming, speed the parting guest."

I may perhaps be permitted brief reference to some of the other amendments which were offered last year, and will come up for final adoption at one of the sessions of the present meeting. The first of these, offered by myself, was to substitute two Vice-Presidents, instead of one Vice-

President, in the list of officers of the Association. One reason for offering this amendment was to enable us to make a somewhat fuller and better distribution of officers, and thereby to improve, if only to a slight degree, the national character of the Association. If this amendment is carried, the President and each of the Vice-Presidents should, as a rule, be chosen from different States or different sections of the country. Such a rule in a society composed of comparatively few members could not be made absolute, but a following of it by tacit agreement, when practicable, will, I think, advance the interests of the Association.

Another amendment, offered at the last meeting, and which I trust will be adopted at this, is as follows:

"There shall be two sorts of members, namely, active members, not exceeding at any one time one hundred in number" (instead of fifty as at present). With reference to this amendment I can only reiterate, in advocating its adoption, the sentiments which I expressed in my Presidential address of last year, namely: "Our membership ought to be at least doubled by the addition of acceptable physicians from all parts of the country; for the American Neurological Association should be in fact as well as in name the great national representative body of those members of the American profession who are interested, either practically or theoretically, in neurology and psychiatry, and the branches of science which are especially correlated and auxiliary to these subjects."

A fourth amendment, offered by Dr. Jacoby, is to the effect that the officers shall be nominated by the Association on the second day of the meeting (instead of the first day). As the object of this amendment is to have this important function performed on that day of the meeting when the probability of a full attendance is the best, I have but little doubt that it will meet with unanimous approval.

Finally, as a matter of business which has continued to engage attention during my term of office, I will again refer briefly to the Congress of American Physicians and Surgeons. At the last meeting, it will be remembered that a resolution indorsing the propositions for the proposed congress was adopted, and a committee of conference was appointed as follows: Drs. L. C. Gray, of Brooklyn; J. Van Bibber, of Baltimore; W. Sinkler, of Philadelphia; E. C. Seguin, of New York; and Philip Zenner, of Cincinnati. Dr. Gray, chairman of this committee, will report to the Society as to its movements and action since our last meeting; and I will therefore only say that I trust the Association will promptly approve of the committee's report, and appoint a representative and alternate to the executive committee which is to make the final arrangements for the meeting of the Congress in September, 1888.

It will be remembered that the main portion of my address last year was devoted to a consideration of the subject of "Arrested and Aberrant Development of Fissures and Gyres." Several references were made in this address to Prof. Moritz Benedikt, of Vienna, and his work in connection with the subject of the brains of criminals. Since the last meeting of the Association, I have received a letter from Prof. Benedikt, and as in it he refers to my address and some criticisms of his own views (which he regards as not properly stating his position), and as he expresses a wish that I shall place him right with his colleagues in America, I shall take this opportunity of quoting from his letter; so that his remarks may be placed on record as part of the proceedings of our Association. The letter, with a few verbal changes and omissions not important to the main question discussed, is as follows:

"VIENNA, March 1st, 1886.

"MY DEAR SIR:—I thank you for sending me your interesting presidential address read at Long Branch. . . .

I see by your publication that my principal intention to excite the interest of the profession for these questions has succeeded in the United States. As I spoke the first time about the anatomical researches on brains of criminals at Paris, 1878, at the Congress, I concluded my speech with the words: 'I protest in advance against the conclusions of the others, as you see, for example, from the pamphlet (one of a number sent to me by Dr. Benedikt) at the congress for criminal anthropology in Rome, I was obliged also to protest against the conclusions of our famous Italian collaborators.'

"Before all I must protest against the *legend* which exists that I have created a fixed anatomy of crime. If I had the opinion to have created a characteristical type of brain for crimes, I had entitled my book: 'Anatomy of Crime,' and not: 'Anatomical Studies on Brains of Criminals.'

"Now I know, with full security, that there exists an anthropology of a typical, abnormal, and deficient man, but not—in our time—of crime. I have found it true from the rich comparative study of heads of epileptics, of criminals, of the insane, and all those with diseases of the brain which are congenital or acquired in early youth.

"When you read my classification in 'Des Rapports existant entre la folie et la Criminalité,' you will see that I reckon under criminality a large number of individuals of normal organizations who become criminals through biographical circumstances, and who cannot have atypical structure of the brain, etc. Nevertheless, you make me (page 20 of your paper) the supposition, as if I had an absolutely fixed type of criminal brain. In opposition to my predecessors in anatomy of the brain, I had found that the principal fissures are not generally separated as those described.

"Au contraire, I found that in general there exist many conditions of the fissure, and I divided the brains in two types; the ones in which the fissures are more separated, and the others in which the fissures are more confluent, and I said only that the brains of crimimals studied by me, *belong* to the second type. As you will see principally in the copy of the letter to Prof. Giacomi, I do not attribute a great importance to the confluence *pur et simple*, but only to those confluences which are very rare in normal brains, as, for example, the confluence of the Sylvian with the central fissure, of the perpendicular-occipital with the interparietal, of the callioso-marginal with the perpendicular-occipital, etc. In the same way I consider certain separations. as of the calcarine from the perpendicular-occipital as important.

"My dear colleague, you would oblige me very much if you would communicate in the way you find convenient, my protest against the named legend to our colleagues of America.

"I would not like to be identified with my 'followers and admirers.' When you read my reserves (page 157 of my book, the last ten lines), you will see that I defended myself in advance against the false conclusions and premature cry of triumph of my 'admirers.'

"It will interest you to hear that all young professors of jurisprudence in Germany are no more in opposition to me, and that also in Italy the priests agree more with me than with Lombroso and Ferri. When you will be so kind as to look another time in my book and to read my further publications, you will see that my opinions, views, and doctrines are quite other than cited in literature, and you have told me exactly (page 29 of your paper) how I was misunderstood, but you will concede more than 'partially.'

"In one publication, *Anzeiger der K. K. Gesellschaft der Aerzte*, No. 48, 1885, you will see that I have presented to that Society three Chinese brains. I have not yet published the description of them, but I will do so the next time, and then I will send you a copy.

"My dear colleague, I find my letter has become too long, and its bad English will not increase the pleasure of reading it.

"Accept the expression of his best feeling from yours,

"F. BENEDIKT."

With these few remarks, I take pleasure in introducing my successor, Dr. Landon Carter Gray, of Brooklyn, N. Y.

The President, DR. LANDON CARTER GRAY, of Brooklyn, then delivered his Inaugural Address.

ADDRESS OF THE PRESIDENT.

In thanking you for the honor which you have conferred upon me, I have deemed it best to remind you of certain facts pertaining to our Association and the branch of medicine in which we are all interested.

It was only in 1872 that the organization of neurological societies began in this country with the formation in that year of the New York Neurological Society. In 1875, The American Neurological Association had its being—only twelve short years ago. Three years ago, the Philadelphia Neurological Society was also organized; so that it has been entirely within the period of fifteen years that the neurological specialty has had, so to speak, official voice and expression. When we contrast ourselves with our European compeers, we find that we have done much more in this line than have they. Germany has only two neurological societies: one in Berlin, and the Wanderversammlung der südwestdeutschen Neurologen und Irrenärzte, unless we can say that the neurological section of the Verein für innere Medicin is an organization of that class. France has no neurological society by that name. England one year ago gave birth to the Neurological Society of London. Italy has a psychological, but none of a neurological character, in the broad sense of the word. Thus, whilst England and continental Europe, with their old civilization, their hoary universities, their teeming medical journals, have only three special neurological societies, one of them started within a year, this new country of ours has three, one of them fifteen years of age. This is certainly a startling contrast, and I think it might prove of some interest to us to search for the causes of the difference. I was very much struck with the remark made last fall by a distinguished English physician who was visiting this country, and who said that what impressed him most forcibly about America was the avidity with which a new idea was seized and practically carried out. I believe that this national aptitude or weakness, as you may choose to call it, is the main cause of the growth of specialism in our country. Talk about it as we may, deprecate it as much as some of our friends do, there can be no doubt whatsoever that the tendency of the day is toward specialism. The modern growth of science has made this tendency inevitable. It would be physically impossible to crowd Ziemssen's Encyclopedia or Pepper's "System of Medicine" into the compass of the works of Galen, Hippocrates, or Celsus, and so the vast modern accumulations of facts that are being added to daily render it impossible for any man to master them in all departments of medicine, be he endowed with the mind of Bacon, or Shakespeare, or Goethe, or Napoleon; and even supposing that such a master mind were to be able to digest and assimilate the facts, he would still have before him the task of familiarizing himself with the specializing technique of each particular specialty, which an earnest, conscientious and industrious man may well congratulate himself upon mastering in a decade. I have but scanty sympathy, therefore, with the attacks that are made upon specialisms. One might as well attempt to dam Niagara with a teaspoon. I believe that the time of the critics would be much more profitable spent in calling attention to the abuses of specialism, and to the setting up as specialists of gentlemen who are insufficiently qualified in the general departments of medicine. Be this as it may, however, I do not see how any one can doubt the propriety of a specialty of nervous and mental diseases. When we consider the great complexity of the anatomy of the nervous system, the equal complexity of its physiology, and the still greater complexity of its diseases, and when we consider the marvellous activity of research in this department in the last twenty years, it would certainly seem as if it needed all the faculties of an intelligent man to keep himself abreast of the progress that has been made. We may fairly say that neurology has been made within the last quarter of a century. Before that time it was but a very inchoate science, and the art that went with the science was very meagre indeed. Just think alone of what a revolution has been effected in the doctrine of cortical localization! If any student, coming up for his examination in 1869, had stated that muscular movements could be produced by electrization of the brain, he would have been thought too ignorant to be given a diploma. If a year later, after the experiments of Fritsch and Hitzig, toppling down with one dingy little article and one or two rude woodcuts all the venerated authority of Flourens, that same student had been examined on the same subject and had *not* stated that electrization of the brain would produce muscular movements, he would certainly have been in equally great danger. Look at the vast literature that has sprung up concerning this doctrine of cortical localization. Look at the wonderful experiments of Munk, Goltz, Ferrier, Luciani, Seppili, Nothnagel, Gudden, and others too numerous to mention. Look at the thousands of careful pathological observations that have been rained down upon this question from every quarter. Look at the great advance in our knowledge of the anatomy of the brain and spinal cord, gained by the destructive methods of Gudden, by the tearing methods of Meynert, embryological methods of Flechsig, and by careful microscopical observation ; at the great advance and improvements in our microscopical methods and our microscopical instruments. Look at the advance which has been made in the differentiation of diseases, as in the demarcation of the different forms which have the anterior horns of the spinal cord as an anatomical substratum ; the quick growth of our knowledge in regard to multiple neuritis, that form of disease which had remained mysterious in the East for centuries under the names of beri-beri and kak-ke, and which was touched into rapid and easy explanation hewn brought to the notice of the higher civilization of the West. Look at the growth of our pathological and clinical knowledge of syphilis of the nervous system. See how the nervous diseases arising from reflex action have come to be recognized as from urethral, ovarian, ocular, nasal, and laryngeal irritations. Contrast for a moment with twenty-five years ago our present knowledge of neurasthenia, lithemia, hypnotism, athetosis, lateral sclerosis, locomotor ataxia, brain tumors. See how our insanities have been more accurately recognized and more humanely and medically treated; how that most baneful of diseases, epilepsy, is controllable by the bromide treatment which we owe to Brown-Séquard; how electricity has been changed from one of the most vague and unsatisfactory departments of medicine that ever attracted the eagerness of charlatans into one of the most precise and accurate methods of therapeutic and prognostic and diagnostic procedure; how the growth of knowledge regarding cerebral localization is lending, in some respects, the most exact precision to cerebral surgery; how hydrophobia is becoming a thing of the past, if Pasteur's claims may be trusted; how the ophthalmoscope, by enabling us to utilize the peculiar disposition and vascular supply of a peripheral nerve, has made possible the diagnosis of what are sometimes otherwise undiagnosable diseases. In the face of these facts, a man may well stand with a serious countenance, even if he be disposed to give up his whole time and attention to the study of the nervous phenomena of which I have only spoken partially. It would be simply impossible for any one who proposes to remain a general practitioner to swallow and assimilate all this varied knowledge. Besides that, it has only been within a very recent time that there have been any facilities for the thorough acquisition of this specialistic knowledge in this country. Nervous and mental diseases have usually been honored only with a short and perfunctory course of lectures in the different medical colleges of the country· it has not been incumbent upon the medical student to take these lectures, he is not examined upon them, and unless he be endowed with a desire for knowledge which looks beyond the immediate exigencies of his graduation examination, he is not likely to pay much attention to them. Most of us, I think, who have been in practice ten years and upwards will look with envy upon the facilities for neurological study which are now extended to the young medical men in the shape of clinics, lectures, articles, and text-books. Ten years ago and over our knowledge was acquired in no such easy way. It had to be gleaned from our own observation and our reading mainly of foreign journals and text-books. We have witnessed, as it were, the development of our specialty, and to keep pace with this development has been a much more difficult task, one that required a man to be much more on the alert than would have been the case if we could have turned to the well-digested and well-sifted text-books of the present day. It would seem as if the medical world at large were waking up to a realization of the great importance of a proper comprehension of nervous phenomena. I presume that most educated physicians would agree with me in believing that no man is a competent practitioner of medicine unless he is acquainted with the circulalatory system of the human body. I venture also to presume that the time will come, and that before we men of middle age are dead, when educated physicians will also believe with me that no man is a competent practitioner unless he is thoroughly acquainted with the phenomena of the nervous system. The circulatory system got the start of the nervous system by a number of centuries; and very naturally, because its phenomena were easier to study; and that is the only reason why the profession appreciates its importance and overestimates it relatively to that of the nervous system.

I have made these remarks, gentlemen, not because I think they are either needful or perhaps particularly interesting to you as specialists, but because it has seemed to me that, outside of your own ranks, there is a lack of appreciation of the delicate and important work that is being done by neurologists, largely, I believe, because of the non-recognition of the various facts to which I have been making allusion.

I sincerely hope that this Association will become a member of the new National Congress of Physicians and Surgeons. I can see no reason why it should refuse to do so. The autonomy of this Association will not be disturbed in the slightest degree, as we are to hold our meetings every year separately, and only to take part every second year for a short time in the joint meetings of the new organization. We shall have opportunities, that can only be offered by such a body, of meeting gentlemen who are distinguished in other departments of medicine; and if any good ever comes from the mental clash and stimulation of medical bodies, it certainly seems to me that a large amount of benefit should come to us all from the mental clash and stimulation that would be afforded by such a large cosmopolitan society as the new organization will be, for we shall see in it the picked men of every branch of our profession.

There is another subject to which I desire to call your earnest attention, and that is the amendment to Art. IV., third clause, of the by-laws, providing (in effect) that the president who is elected at this meeting and who presides at the meeting next year shall be put in charge of the arrangements for the meeting over which he presides. As it is now, I am sitting at the head of the table which has been furnished forth by the kind efforts of my distinguished predecessor, Dr. Mills; not that I have any objection, but that it is rather unjust to Dr. Mills, and leaves entirely too much work to him and too much play for me. I am at a loss to know how any such by-law could have been passed except by some oversight, and I earnestly recommend the adoption of the amendment.

DR. E. C. SPITZKA, of New York, then read a paper entitled

ON SOME POINTS REGARDING THERAPEUTICAL AND OTHER INJURIES OF THE BRAIN.

In the course of certain experimental inquiries undertaken between eighteen and three months ago, I made some observations of a surgical character which to me seemed novel, and to which no reference in the writings of other experimenters has been found by me. The experiments refered to varied from the excision of entire hemispheres, simple trephining, and the introduction of foreign substances into the arachnoid cavity to the injection of such substances into the brain tissue directly, into the ventricular cavities, and into the arachnoid sacs at the base of the brain. Terebration or trephining necessarily preceded the introduction of hypodermic needles in the latter instances.

It was also my fortune to witness in one instance an extensive operative exposure of the human brain, and to make the post-mortem analysis in two cases where operations had been attempted or made in accordance with the modern teachings of cerebral surgery.

It is not necessary for me to state that under strict antizymotic precautions the amount of brain tissue that may be removed from animals without compromising life is practically unlimited as long as the brain axis is not injured in special provinces. Uniformly, I have been able to abuse this organ in dogs to an extent which some years ago would have appeared incredible, even without strict antisepsis; in a large number of cases, without any antiseptic precautions, and in a few under intentional violation of the principles of surgical cleanliness.

The results to which I would especially direct attention are those relating to the healing of wounds made by hypodermic needles and trocars. C—— N——, aged 11 years, suffered from symptoms which were interpreted by Dr. Cypert, his family attendant, as indicating a cerebral tumor. He was thrown down by a horse in the early part of the year, and certain of his symptoms became aggravated. He was taken to St. Luke's Hospital, and a suspicion having been expressed that he was suffering from a cerebral abcess, trephining at the seat of the injury was performed, and a hypodermic needle introduced three times in-various directions. No fluid was obtained, the button of bone was replaced, the periosteum united, and the wound closed. No untoward result followed. The symptoms which to my mind, as well as to Dr. Cypert's, indicated a contralateral tumor progressed, and the diagnosis previously made was adhered to. He died comatose in May, three months after the operation. The autopsy was performed the same day.

On removing the calvarium, it was found that the dura bulged corresponding to the trephined spot. It was intimately adherent at the meso-caudal third of the trephine circle, but altogether disconnected from the bone at the ecto-cephalic third. Its structure was entirely normal. On removing the dura, an exact reproduction of the outline of the button was found in the arachnoid. The latter was milky white and thickened in a circular area, the transition from the opaque to the clear arachnoid being very abrupt. At the ecto-cephalic third it appeared villous, and rose steeply above the general surface to a height of two millimetres. Corresponding to this rise, the underlying gyrus exhibited an anfractuosity.

The cerebral hemisphere, I may add parenthetically, which alone concerns us here, was entirely healthy aside from the slight traces left by the operation. The tumor was found where it had been located during life—in the opposite cerebral crus.

On searching for an indication of the punctures made, none could be discovered on the surface of the brain nor in the pia, arachnoid, and dura.

On carefully making thin sections of the region involved, three dark bluish lines were found extending vertically to the surface. One, the longest, measuring a centimetre in length, nearly reached the surface, and in the hardened specimen, a slight pucker was found to mark the point where it would have reached if it continued. The three showed the same composition—coagulated blood[1]; at their deeper ends there was a rusty-colored continuation, which microscopic examination showed to be due to the presence of a large number of blood-corpuscles on the otherwise normal cerebral tissue.

There were no spider cells, nor indications of any inflammatory disturbance whatever in the cortical or medullary tissue, nor did any of the nerve cells, as far as they could be identified, exhibit structural changes.

The blood-vessels were normal. I could discover no certain indications as to which, if any, vessel had been wounded.

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[1] **Invading the corresponding temporal lobe, which had not been suspected. This case will be published in detail.**

Undoubtedly the three delicate tubular semi-clots represented the entire extent of the permanent damage inflicted by the probe-punctures. So far as this case goes, their harmlessness is proven. In one other respect this case constitutes a remarkable confirmation of the soundness of recent surgical innovations. I refer to that of reinserting the button of bone removed in trephining, and allowing it to reunite with the cranial vault from which it had been removed, as McEwen suggested and Weir has ably carried out.

It may be remembered that I described the thickened arachnoid, as well as the gyrus corresponding to the ectencephalic third of the trephine circle, as rising above the surface. Here also the periosteum had not united over the rim, while the dura was non-adherent and dull, exhibiting a doubly bridged solution of continuity 1½ centimetres in length.

Corresponding to this, the button of bone was raised above the surface, and had failed to contract union with the rest of the skull. But at the opposite point it had united in nearly its entire thickness from the dural aspect outwards, while the ditch cut by the trephine and the central depression were as complete on the outer side as if they had been freshly made, excepting for the union of the periosteum at the cauda-mesal arc. Not only was there a complete obliteration of the saw line on the dural side at this point, so that the inner contour of the calvarium was restored, but angular processes of newly-formed bone jutted up from the circumference, where they were rooted with a broad base, to unite with the button by their apices, thus constituting, as it were, a spurious sutura serrata. The button was slightly movable at the loose end, but only a pressure of several pounds would have severed the connections mentioned.[1]

From this it is evident that in young persons, even under well-discouraging circumstances, as wounding of the dura by the saw, partial hernia of the brain, and lifting of the button, the dura made successful efforts to agglutinate the removed button and restore the integrity of the calvarium.

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[1] Before the suggestion to remove and preserve this interesting specimen by removing a fenestra from the skull was made, the scalp had already been closed.

In connection with a number of cases where trephining was practised, I have found the almost self-evident proposition illustrated—that the larger the opening the less is the probability of protrusion of the brain. In the case reported by Dr. Graeme Hammond, the square area of removed calvarium was certainly the largest on record among the cases where it was undertaken for medical purposes. Yet the extent of the protrusion, which is accurately marked in the alcoholic specimen, is not above a few millimetres, and this notwithstanding the pathological increase of intracerebral pressure.

Immediately under the cortex, in the region bordering on the white substance of the post-central gyrus, in a thin layer of tissue overlying the smaller cyst, also in the white substance ventrad of the larger cyst, I found small recent hemorrhages. It is probable that these resulted from the too sudden relief of external counterpressure. The danger of hemorrhage from this source should be borne in mind in all operations involving the removal of a large part of the cranial rolls.

The observations made with hypodermic and other needles on the brains of dogs relate to three points.

First, the formation of cerebral abscess at points remote from the point of injection of septic material.

In May last, a mongrel collie had fluid from a cerebral abscess, to the amount of a twentieth of a drop dissolved in bouillon, injected inwards and downwards; it did not reach the ventricle. On the autopsy, five days later, some injection of the pia was observed on both sides, most marked on the same side. A large yellow focus was found in the ectoventral part of the hemisphere in no connection with the channel of the needle. There was noticeable irritation around the latter, but no contiguous tissue-change connecting it with the abscess. Indeed, the ventricle intervened between injury and lesion.

I am able to exhibit almost the counterpart of this result in a specimen that has not yet been thoroughly dissected.

The second observation relates to the constancy of the channels made by exploring needles in brain tissue. We have already seen, from the human case cited, that practically hypodermic needles can be inserted with perfect impunity.

My experience with animals has been remarkably different in this respect, and would seem to indicate an enormous individual difference. On the one hand, coarse needles have been introduced, coarse substances injected, the animal killed after a month, and not the slightest trace of the channel or the point of penetration found. On the other hand, comparatively innocuous substances have been injected with fine needles, and the animal being killed after a year, the tract of the needle was found as fresh as if it had been made a few hours before.

It seemed to be indifferent how deeply the needle was inserted, whether it penetrated or passed the ventricles or reached the basilar arachnoid sacs. Experiments undertaken under apparently the same circumstances yielded different results in different animals. As a rule, it was in vigorous, large animals that the channel of the syringe was found obliterated, and in those with the opposite characteristics that it was found patent after a long period. It occurred to me that a hemorrhage might account for it. A remarkable exemplification of the former alternative was that of a mongrel dog of powerful, bony build, whom I intended to kill by inducing suppurative encephalitis. My cultures of the streptococcus were interrupted, and on the spur of the moment I used a material which had uniformly produced even more furibund lesions, namely, a drachm of New York street mud scraped from beneath the hoof of a horse in the stable where the dog in question was kept.

The skull being terebrated, the needle of a hypodermic syringe was introduced, and the entire drachm of street mud previously triturated was injected, as it was supposed, into the thalamus. The dog recovered from the rapidly performed operation without any untoward symptoms. For one month he showed no signs of any kind whatever. For two weeks following he became surly and snappish, and finally recovered, acting in every respect as healthy dogs do. About four months after the operation, he became afflicted with the "mange" and was killed. His brain, which was hardened in alcohol and sliced in a number of sections, about thirty to the inch, showed no signs of the entry point of the syringe, of its channel, nor of the carbonaceous mud that had been injected. In the arachnoid of the ponto-chiasmal lamina two large masses of dirt, held together in a transparent mucoid substance, were found. They were not firmly united to the arachnoid, for on incising the latter they escaped together.

A third mass of the same character was found in the arachnoid lamella extending on the basilar face of the oblongata.

The inability to discover the channel of the needle in this case is all the more remarkable, as the point of skull terebration could be easily identified. This is exceptional.

In two other cases where the needle was apparently introduced in the same direction, and simple emulsion of calf's cud in unsterilized bouillon had been injected in quantity not exceeding a drop, not only did the channel remain patent, but the cerebral hemisphere injected underwent atrophy. One such case has been subjected to microscopic examination and, aside from the possible existence of doubtful secondary degeneration, I am able to say that no trace of any lesion, hemorrhagic or inflammatory, was discoverable. The perivascular spaces were greatly dilated. The other, remarkable for the length of time the animal was kept alive—it was killed thirteen months after the operation—I have simply transsected the brain of at the line of injection. It exhibited at the time the fresh dissection was made the entire channel made by the needle, somewhat wider than the latter, but perfectly rectilinear, the shape of the point of the needle which struck the capsule being readily recognizable. The walls of the channel appeared slightly buff-colored, and a rusty colored fluid filled it. Hardening has almost obliterated the outline of this channel, except at its entry point, but the atrophy of the caudate nucleus and thalamus and consequent collapse of the entire hemisphere is very evident. What is the cause of this atrophy? Is some such result to be apprehended from deep insertion of exploring needles in human brain surgery? I think not. The mass operated on is so much greater that the slight amount of displacement by the needle is of no moment. Still it were well to bear in mind that a species of irritative atrophy can be set up by such intervention, not due to gross lesions that could otherwise explain its occurrence.

In the course of a series of experiments, unfortunately interrupted, but which showed, as far as they went, that the more frequently the brain of the dog is interfered with by the insertion of indifferent and virulent substances in the brain tissue and subdural space, the greater its resisting power to injurious agencies which produced uniformly fatal results in dogs operated on for the first time. I found two cases of dwarfed growth and imbecility developed, which unfortunately terminated in death through neglect during my absence from the city. In one of these instances, a Newfoundland dog, the elongated cranial contour showed that the bilateral injection of zymotic material, although followed by no immediate results, had done symmetrically what the single injection on one side did in the dog whose brain is exhibited.

From my limited experience with human, and the observations cited from experimental pathology, I should be inclined to draw the following conclusions:

1st. That exploratory needles should never be introduced in the internal capsule, the contiguous ganglia, or the lateral ventricles, merely for exploratory purposes, unaided by positive clinical indications of the location of disease.

2d. That exposures of large surfaces of the brain are not feasible in persons with feeble vascular walls, owing to the danger of intracerebral hemorrhage.

3d. That buttons of bone, reinserted under aseptic precautions, are, even in the event of non-union, entirely harmless.

4th. That in young persons, buttons of bone may become reunited to the calvarium even though perfect coaptation be not assured.

I should add that I have very recently experienced how desirable it is that, in the event of trephining for the relief of cortical irritation, on removal of the latter the button of bone be replaced.

A janitor, injured seven years previous by a fall of a beam a little to the left of the vertex, over the post-central gyrus and superior parietal lobule, had attacks of epileptiform derangement inaugurated by intense bursting pain at the spot indicated, and numbness followed by rigidity of the right leg. At my suggestion, Dr. Vanderpoel trephined at the spot in question. An adhesion to the dura requiring careful dissection was found, and for three months the patient showed a complete change of character, and remained free from seizures. At the end of that time, while arranging some bell-wires, one broke, and springing struck him precisely over the trephined spot with the point, inflicting a scalp wound.

That very moment the rigidity and numbness of the leg recurred, the headache returned, increased in intensity, and another epileptoid mental equivalent developed. Since that time there have been numerous recurrences, all marked by the same aura.

REMARKS ON DR. SPITZKA'S PAPER.

DR. GRAEME M. HAMMOND, of New York.—I agree with Dr. Spitzka that the button of bone removed in trephining should always be reinserted. I saw one of Dr. Weir's cases, in New York, in which he had removed from the right temporal region a piece of bone, operated on the cortex, and then replaced the piece of bone removed. Two months afterwards, when he exhibited the patient to the neurological society, the piece had become solidly united to the cranium. I do not know whether that is the usual result or not, but in his case it was firm and made a good protection for the brain over the seat of the operation.

Dr. James Hendrie Lloyd, of Philadelphia.—I would like to ask Dr. Spitzka if he has punctured the brain in infants, the subjects of hydrocephalus. I ask the question because recently a small infant was brought to me with the idea of having this done. I speak entirely apart from other considerations, as to whether or not such an operation would result in good, but simply with respect to injury to the brain, whether there is any special danger, how large a trocar should be used, what precautions should be taken, and also the location of the point where the puncture should be made.

Dr. C. K. Mills, of Philadelphia.—While I think it is undoubtedly a good thing to reinsert the button of bone removed in trephining in many cases, yet, from my experience in having the operation performed, as I do not perform the operation myself, it seems to me that there might be possible objections to it. In some cases, at least, as it seems to me, there would be a greater tendency to the occurrence of inflammatory conditions of the dura; that is, an increased liability to the development of a certain amount of inflammation from irritation. I think that it is well worth while to consider this point in connection with some of the cases. In cases where are found irregular conditions, so far as the bone is concerned, it might be sometimes objectionable to reinsert the piece removed. Dr. Spitzka does not mention the size of the piece removed in Dr. Hammond's case.

Dr. Hammond.—It was about an inch square.

Dr. Mills.—I am unable now to give the exact size of the portion removed in one of my cases, but I will secure the exact measurements and forward them so that they can be placed on record. I am sure, however, that the portion removed was three or four inches in one direction and in the other direction perhaps three inches.

Dr. Spitzka.—For medical or surgical indications?

Dr. Mills.—Simply to meet surgical indications. The depression of bone was situated over the longitudinal sinus, and we believed that there were very strong indications for another operation, and the bone was removed by trephining twice and then using the rongeur. It is in conditions of that kind that it might be best not to attempt to replace the bone removed. In this case it would have been desirable to restore the bone, but there was an irregular mass, and the question is whether there would not have been a recurrence of the conditions for which trephining was performed. One more point in Dr. Spitzka's paper interested me very much, and it was in connection with the third case. The third of his cases was highly successful so far as the surgical procedure was concerned. Two were successful so far as the results obtained, for which the operation was performed. In the third case, the patient is living and the mental condition is improved. But the fact, if I understood him right, that after one operation the animal stands the next operation better, brings him to the conclusion that the second operation can be performed with greater impunity than the first, and so on, the third and the fourth, that I should regard as an important practical matter as borne out by my observations in those cases referred to and in others not mentioned. In the first case the operation was the most serious which I have ever seen performed on the head, with the loss of large quantities of blood, and the patient was in the condition of violent acute mania, yet she made a perfect surgical recovery in a short time and is improved mentally. In two of the other cases, the operation was serious, and yet the patients had not an untoward symptom. The fourth patient died, but was almost moribund when the operation was performed.

DR. SPITZKA.—I should say, in justice to the surgeon who performed the operation and reinserted the piece of bone in the case described, that it was Dr. Charles McBurney, of New York. I am ignorant of the case cited by Dr. Hammond, but I think the real credit belongs to McEwen, who, while he did not reinsert a piece of bone, opened the way for it by sprinkling on bone dust or making bone grafts. My own attention was drawn to this forcibly by noticing that the bone dust from the trephine, when it dropped into the cavity, did no harm whatever. A large amount of bone dust in trephining may drop into the cavity and disappear.

With regard to the question asked by Dr. Lloyd concerning hydrocephalus, I should not hesitate in a case of internal hydrocephalus to insert a large canula under antiseptic precautions. I have not performed that operation myself, but I have seen it done successfully by Dr. Detmold, of New York. I have tapped twice, but they were cases of large hernias through defect in the skull, and the operation was performed without any difficulty whatever.

As is well known, we operate on spina bifida with antiseptic precautions and the use of Morton's fluid with perfect impunity.

With regard to dogs surviving the second operation better than the first, there may be a source of error in that statement, because the dog surviving the first operation may be a better animal than those in another series. But I got my impression from experimenting on 120 dogs. My first object in experimenting on these animals was not that of the paper, but for making observations in connection with experimentation on hydrophobia; to show to the profession and the public that there was a spurious creation of a hydrophobic scare. It was for this purpose that I repeated the experiments to see if I could obtain the results, and they were repeated and the result obtained again and again. The material which I used was of different kinds, and it is remarkable that in four cases I used such horrible substances that I could scarcely credit the claim I now make, as it seems to me, justifiably, had I before heard it from others. I used the filthiest of the street mud I could obtain, and the dog had never been operated on before, yet the wound did perfectly well. I should say that the button should be reintroduced only when the projection of the inner piece is removed. And I should have added the qualifying clause, when speaking of the largest removal ever made, "for medical indications." We are all aware that a large part of the cranium has been removed successfully in surgical cases.

DR. JAMES J. PUTNAM, of Boston, then read the notes of a rare case of

HYPEROSTOSIS OF THE CRANIUM.

E. L., 29 years old; married for ten years. Her father is living and well; her mother died during the patient's youth, and she can only remember that she had some trouble with her head for some years previous to her death. One sister, who died eventually with phthisis, also had a trouble with her head which patient believes to have been the same as her own. She died in Sweden while patient was in this country, and she cannot tell more accurately about her.

E. L. was in good health up to the time of her confinement with her first child, nine years ago. At that time, she began to have intense pain in the head, mainly at the vertex, through the temples, and in the eyes. About two years later, she had a miscarriage; after that the pain became worse. The pain was at first intermittent, later rather continuous.

The broadening of the face and prominence of the eyes were first noticed about six years ago, and have steadily increased. There was no history of either rachitis or syphilis.

Her friends say she is still as intelligent as before, but this, of course, has not been fully tested.

Her teeth began to fall out three years ago, and are now all gone.

Two years ago, she began to have purulent discharge from both ears, and to lose her hearing. She is now perfectly deaf, and occasionally has discharge. She thinks she can hear her own voice, and that at one time this was not possible, but it is probable that in reality she only feels the vibration, for she also thinks she can hear footsteps.

Her gait has been tottering and stumbling for some time past, and she has even fallen to the ground, probably because she feels dizzy when walking. The use of the hands is good, though feeble, and she has never had pain in the limbs.

Her nutrition has maintained itself, and her appetite has remained good.

Previous to five years ago, her skin was white and fair; since then it has been growing dull and sallow, on the hands as well as the face. The catamenia have been absent for four years. When seen by me her physical condition was as follows:

Patient sits with mask-like face; lines of expression being almost obliterated. Lips scarcely move, if at all, in articulation; in fact, lower lip hangs down perfectly flaccid, unless when raised by hand, when it retains its place purely by adhesion.

The eyes so prominent that at least half the globe seems to project beyond lower lid. They are continually open from paralysis of the orbicular muscles. Motion of both globes perfect and harmonious.

There seems to be complete paralysis of upper as well as lower branches of facial nerve. Face and head have broadened in a remarkable manner; the skull being especially broad about level of eyes, between eyes and ears.

Circumference of head, 59 cm.; greatest breadth, 16 cm.

Color of skin of face and hands sallow.

When asked to protrude tongue, first puts it out towards right, and to less extent than normal; but when urged to put it towards left does so with apparent ease, but at best does not get it beyond her teeth.

Speech very imperfect, scarely intelligible, from failure, apparently, to use lip and tongue.

She can use both arms and legs, but rather feebly.

Husband thinks that she uses one eye better than other, but ophthalmoscope shows no neuritis, congestion, or atrophy, and vision is apparently perfect.

Cornea dry, on account, evidently, of the lids not closing. Pupils small.

Purulent discharge from both ears. Nose looks as if jammed inwards, evidently on account of the prominence of forehead and cheeks. Bones of antrum not very prominent.

Electrical reaction. Faradic reaction absent in both facial nerves, and degeneration reaction present in muscles of lips, forehead, and cheeks. Only a weak current could be used on account of sensitive condition of patient.

DR. PUTNAM also presented a

SARCOMATOUS TUMOR OF THE BRAIN

with the following history:

Mrs. F., married, in good circumstances, 38 years old; in good nutrition and in apparently good health when first seen (February 9th, 1886).

No family history bearing on present illness; tendency to periodical headaches lasting through one day and passing off at night-fall, which patient thinks she inherited from her father. About eighteen months before my examination, these headaches increased markedly in frequency, but did not change in character.

The whole duration of illness, *i. e.*, from the time when the first symptoms—possibly attributable to her disease—were noticed until death, was about twenty-one months; but no symptoms unequivocally due to the disease were noticed until about four and a half months before her death.

The first of the possible symptoms was the increase in the frequency of the periodical headaches.

The first unequivocal symptom was a terrific headache, which lasted two days, and ushered in an almost unbroken series of headaches which continued until death.

The severe attack began just before a catamenial period, and the flow ceased after two days instead of lasting five, as was customary. The headaches were mainly frontal, but the pain sometimes spread all over the head and into the nuchal region. She rarely suffered much during the night, but greatly on waking in the morning; and she had had a few severe attacks of vomiting in the morning.

Besides the headaches, she began to have, at this time, slight and vague sensations of vertigo, especially on stooping, often accompanied by a feeling as if the floor were rising to meet her.

The gait was not staggering, but there was a slight loss of balance on turning suddenly.

Vision was slightly indistinct (o. d. .0.6; o. s. 0.3, H. D). and well-marked optic neuritis was present.

There were no localizing symptoms of cerebral disease.

The mental condition was good, except that she showed a sort of indifference and light-heartedness with regard to her symptoms and her condition, which is, perhaps, attributable to her disease. Except for these symptoms, the patient appeared at that time to be in excellent health, and it is interesting to note, in view of the seat of the tumor, and the fact that it probably began to increase pretty rapidly in size two months before my examination, that my notes speak of her as appearing rather unusully talkative at her first visit.

From this time the patient became gradually worse until her death, which occurred two and a half months later. The manner in which the increased pressure showed itself was rather interesting. For six weeks before death she lay nearly unconscious, and apparently without much sign of pain, unless it was on this account that she kept her right hand constantly at her head and yet she could be roused to make more or less response up to the last day before her death.

Even before becoming so stupid, her power of conversation had been getting more and more limited, and this was somewhat out of proportion to the mental limitation which was likewise progressing. A single word or phrase of exclamation or assent, such as "I declare," or "don't say," would be made to serve for answer to every sort of question, and, as a rule, she ventured no remarks on her own account. At the same time such expressions as she did use were used correctly, and in her delirium she talked coherently about her home affairs. It is interesting to note that such localizing signs as there were, were referable to both sides of the brain. Thus, the tumor being on the left side, she complained a great deal of pain in the two middle fingers of the left hand, running upward to the elbow, and at one time she used the left hand less than the right.

There was a paresis of the buccal muscles of the right side of the face, possibly the upper also to some extent, with slight deviation of the tongue to the right.

The pulse varied in frequency between the outside limit of fifty and seventy-five, but became weaker. The respiration did not change much in frequency or rhythm, except that during one night, by the description of her friends, it was of Cheyne-Stokes' character. It was, however, labored and heavy much of the time during the last weeks of life.

The temperature remained normal so long as I saw the patient, which was within a few days of her death.

The examination of the head was made thirty hours after death. I will speak only of what was abnormal.

The convolutions were flattened so that all trace of rounding was obliterated, and the sulci appeared as lines drawn on a flat surface. The tumor was first seen, after laying back the flaps of the dura, as a dark glistening mass which proved to be a cyst of the outer and upper portion of the tumor, filled with blood and detritus, and occupying the position of the caudal extremity of the second and third left frontal convolutions. The remainder of the tumor was much firmer and lay mainly beneath the frontal lobe, reaching toward the median line so far as to push the left olfactory nerve somewhat to one side. The only attachment of the tumor was to the dura mater covering the left wing of the sphenoid over a space somewhat larger than a nickel cent. The attachments were broken without difficulty, leaving a roughened surface, beneath which the bone was smooth. The mass had forced the lips of the Sylvian fissure widely apart and the frontal lobe was reduced to about two-thirds its natural size. The third frontal in particular was thinned, and softened by the pressure and œdema. There was no localized or inflammatory softening. The cerebral arteries were pervious and supplied the tumor in part with blood; but except for this there was no connection between the tumor and the brain.

The surface of the brain was dry and blanched.

As soon as the tentorium cerebelli was cut, a large quantity of clear fluid gushed out and the ventricles also contained fluid, but were not distended.

The tumor, after hardening in alcohol, displaced 100 ccm. of water.

It proved on microscopic examination to be a sarcoma, and in spite of its size it seems not impossible that it could have been removed if its position could have been ascertained.

It is, of course, just in the case of these slowly-growing benign tumors that localizing signs, which might serve as a guide for operation, are least often found. The question may, however, be raised whether, when, as here, unmistakable signs of a slowly progressive growth are present, and no sign of constitutional taint can be found, the presence of such a sign as facial paresis, which was detected in this case several weeks before death, ought not sometimes to be considered as an indication for an exploratory operation, in the hope that just the state of things might be present which has been described. Thermometric observations were not made. I will only add that this case is another instance in proof, if further proof be needed, of the fact that the absence of susceptibility to iod. potassium is not a necessary indication of syphilis.

The dose was carried, without any material difficulty, to two grammes, and could have been pushed further had the course of the symptoms offered any encouragement for so doing.

REMARKS ON DR. PUTNAM'S PAPER.

DR. SPITZKA, of New York.—There is one source of error in the explanation of the symptom of pain in the two fingers mentioned by Dr. Putnam. I saw a remarkable illustration recently in one of the recorded cases in which there was an easily localized surface tumor of the brain with complete paralysis of the opposite arm, preceded by the same sarcomatous growth of the brachial plexus as existed in the brain, and it is possible that the symptom of pain in the two fingers in Dr. Putnam's case was not due to the cerebral tumor. There is this difference between the symptoms of the cortical and spinal lesion. In the former we have numbness along the course of the whole hand and forearm and rarely in the distribution of one nerve, and so long as the peripheral nerves were not examined we are not certain how the symptom is to be interpreted. If we have facial paralysis and ulnar-nerve disease at the same time, we should expect that they were due to the same lesion.

I would ask Dr. Putnam if he had encountered in literature a remarkable case of hyperostosis in which the disease was so extensive that the orbital cavities were obliterated, the antrum of Highmore almost completely closed, and the skull porous. The association of double otorrhœa is remarkable and interesting in his case.

DR. PUTNAM.—I recognize perfectly well that in the absence of a post-mortem examination of the entire body, the possible, perhaps probable, justice of Dr. Spitzka's criticism. I have seen a patient, however, who had a tumor of the brain, lasting many years, and eventually disorganizing both sides of the brain, who presented for a long time absolutely no symptoms except pain and numbness of one wrist, not following the course of any particular nerve. In the case reported, the pain was in the two middle fingers, and unless I am mistaken, peripheral pains, not occurring in the course of single nerves, and yet not segmented, are among the symptoms of cerebral disease.

(To be continued.)

Editorial Notes and Miscellany.

At the last meeting of the German Medical Congress, Professors Nothnagel and Naunyn made a report upon the present state of the question of cortical localization which deserves more than a passing notice. The report is in many respects an interesting one, and an additional one need not be looked for for many years to come.

The most important conclusion at which Nothnagel arrives is, that, as far as *human pathology* is concerned, cortical localization is a settled fact. He refrains from expressing any opinion regarding the conflicting views of physiologists. But Nothnagel is not willing to accept the ordinary views regarding psycho-motor centres, for he shows that a patient can be possessed of the intention of performing a movement without actually being able to perform it. In other words, that the memories of previous movements are not necessarily stored in the same cells from which definite movements are started. Applying the same argument to the visual centres, Nothnagel claims that a person may become totally blind from the destruction of both so-called visual centres, but that he may still retain the memories of former visual impressions. Such terms as psycho-motor centres should therefore be dropped. The most that can therefore be said of a centre— of a motor centre, to